



Mississippi National River and Recreation Area

Aluminum Boat

Objective:

Build an Aluminum Foil Boat that will float and hold pennies.

Science Concepts:

Buoyancy- objects float because water pushes against them. Water's buoyancy makes it possible for boats to float - without which early exploration and commerce would not have been possible.

Skills:

Design a boat and evaluate design.

Materials:

Sheets of aluminum foil, approximately 12" x 6" (keep the size uniform)

Tubs of water

Bowls of pennies (up to 100 per tub)

1 tsp of bleach (per tub)

Cloths or paper towels

2 buckets for used foil and paper towels

Preparations:

Fill tubs with 3"- 4" of water. Add 1 tsp of bleach to each tub. Cut foil into uniform size sheets. Put pennies in bowls. Provide towels to mop up spills.

Directions (to students):

1. Shape a piece of aluminum foil into a boat shape.
2. Float the foil on water.
3. Add pennies until the boat sinks.
4. Count the number of pennies the boat held.
5. With a new sheet of foil, redesign the boat hull and repeat test.
6. Record the number of pennies held and student's name on the board.

Questions (for students):

1. What can you say about your hull design?
2. What is the equivalent "boat" to your design? Canoe, barge.
3. How does the placement of pennies affect the number the boat holds?
4. What kinds of boats are used on the Mississippi River to haul cargo? Why? What advantages do barges have over deep hull boats?

Note to teacher:

Give students the opportunity to be as creative as possible with the hull shape. Make no suggestions, unless to show how to fold up one side to make an edge. The best designs are flat barges with small sides. The placement of pennies also makes a difference in the number held. The record for one sheet of 8" x12" foil is around 280 pennies. Recycle the foil along with your pop cans.

Science Museum of Minnesota, 1998.